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EVALUATION OF THE SUSTAINABLE DEVELOPMENT OF RURAL SETTLEMENTS. CASE STUDY: RURAL SETTLEMENTS FROM ROMANIAN BANAT

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Abstract: Sustainable development is a major objective of the European Spatial Development Perspective (ESDP), with rural areas being target areas, favored for intervention due to recognition of their vulnerability. The present study aims to assess the cumulative effects of post-communist transition on sustainable development of rural settlements in a regional area of Romania – Banat – as well as to identify the determinants of different sustainability levels. The study employs qualitative data provided by different institutions and open access online databases, obtained through semi-structured interviews conducted with the authorities and source-individuals coming from the communities selected as case studies, respectively through direct and indirect observation. The methodology consisted of: analysis of the environmental dimension of countryside sustainability; assessment of socio-economic and institutional sustainability of rural settlements, based on selected indicators; the correlative analysis of rural settlements efficiency levels and their interaction with their regional structural elements (axes, poles) in order to establish a typology of rural areas, suggestive of the role and place of rural settlements in the regional system; identification of factors responsible for different levels of sustainability, through case studies for each type of space. Most rural settlements in Banat (49.72%) fall into the deep rural type, works out of inertia, present a very low level of reactive resilience, and they are characterized by pronounced social and economic vulnerability. 31.36% of the settlements are intermediate rural areas, featuring moderate sustainability, and moderate reactive resilience. These rural settlements have the potential of becoming the most sustainable in the Banat area. 9.46% of rural settlements have high levels of reactive resilience, making up integrated rural areas that function in interdependence with the regional urban pole. Given the rise of ecological vulnerability, these settlements have moderate sustainability. 9.46% are settlements in difficulty, lacking resilience, with very pronounced social and economic vulnerability.

Keywords: Sustainable development, rural settlements, resilience, vulnerability, Banat, Romania

1. INTRODUCTION

Sustainable development is no longer just a *desiderate*, one intensely circulated in media and political discourse, but an *objective* of regional development policies, whose effectiveness is demonstrated by the assessment of the sustainability of the spaces where these policies were applied. On a European level, sustainable regional development, linking cohesion, heritage conservation and balanced competitiveness, is the main objective of the European Spatial Development Perspective (ESDP) and rural areas are among its target areas, favored for intervention due to their recognized vulnerability (Audirac, 1997; Beckmann & Dissing, 2004; Bruckmeier & Tovey, 2008; Verburg et al., 2008; Babuchovska, 2009; Bole et al., 2013).

The rural space is particularly addressed in the context of sustainability because rural areas have experienced multiple processes affecting their sustainability: aging, degeneration, dissipation of the traditional way of life, opposition to urbanization, intense touristic exploitation, serious environmental damage, the apparition of derelict spaces left behind by extractive industries. Obviously, they were manifested differently depending on socio-historical

and spatial contexts.

The Romanian rural area had a different evolution from that of the European space as a whole, on the one hand due to the accumulation of historical backwardness (because of the frequent wars, the perpetuation of the feudal system until the 19th c., the perpetuation of the system of large agricultural properties until 1920, and the absence of concern for the development of a strong peasant class) and, on the other hand, due to the intervention of a major junction in its development: the installation of the Communist regime in 1948, respectively, the fall of Communism in 1989 (Otiman, 1997).

The Communist regime set the rural space on a path of artificial evolution, along which rural communities lost control over the management of their own resources, which had become state property, leading to agricultural lands being exploited extensively, while other resources were being exploited intensively, with no concern whatsoever for an ecological balance.

The fall of the Communist regime in 1989 marked the beginning of the post-Communist transition.

Indefinite in time, the transition is the gradual shift from discretionary, centralized management, performed in the name of Communist ideology – to the restoration of the territorial systems' capacity for self-organization, in the context of liberal democracy and of the rule of law (Ancuţa, 2008, p. 21).

The context of this transition, a very dynamic one for the Romanian rural area, was marked by: disbanding of the Communist agricultural structures, drafting the law establishing private property on land in the absence of inventory transfer; delay of the forest and land restitution; demographic flows of return to native villages, due to the dissolution of industry; the apparition, in the period preceding Romania's EU accession, of European funding programs for rural infrastructure projects, for the support and diversification of agriculture; the delayed definition of a legal framework for transactions with land and the leasing of agricultural land, respectively of a legislative and institutional framework for rural development; EU membership and the opportunity for benefits from subsidies or from European grant funding for rural development projects.

The transformation of the inhabitants and of the various levels of government into *agents* of their own development and into responsible resource managers took place in very different ways, with direct effects on their sustainable development.

The present study aims to assess the cumulative effects of post-Communist transition on the sustainable development of rural territorial systems in a regional area of Romania – Banat – as well as to identify all the determinants of different sustainability levels.

2. MAIN CHARACTERISTICS OF THE LABORATORY SPACE

The studied area is located in Southwestern Romania, it represents 8% of Romania's surface and it holds 5% of the country's population, it is characterized by a complex geo-economic potential, due to the presence, in approximately equal proportions, of three landscape types – plain (with good agricultural suitability), hills (recoverable for vineyards, horticulture and grazing) and mountains (of medium height, with subsoil resources exploited in the past and, in the present, with many protected areas, with pastures, with forestry and hydrographic resources). The region is well connected to its surroundings through the national and European transport axis, but accessibility and urban polarization are not provided evenly throughout the regional area (Fig. 1).

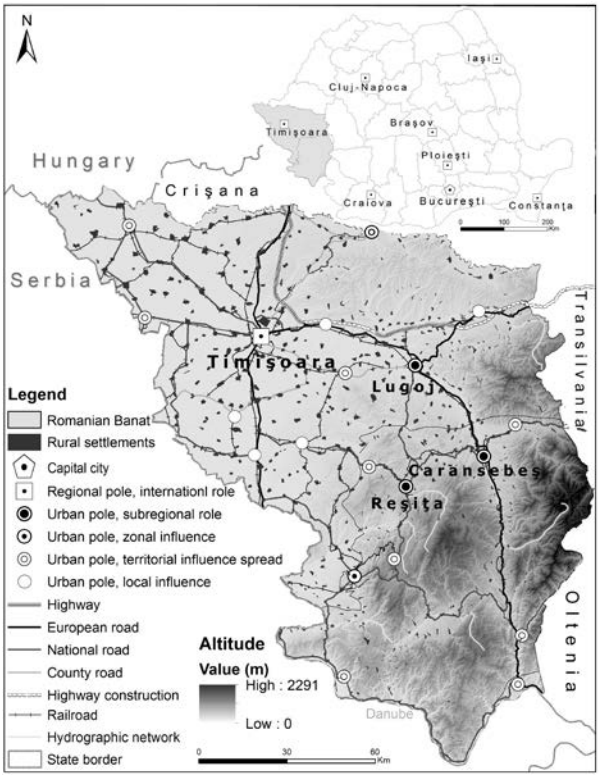

Figure 1. Romanian Banat: regional structure

The rural area holds 84.78% of the surface of the region, concentrating 35.1% of its population. The Banat region had a special historical destiny: being part of the Habsburg Empire (1718 - 1867), respectively of the Austro-Hungarian Empire (1867-1919), gave the region its multiethnic and multicultural character and, until the 20thc., an

evolution that set it apart from the rest of the Romanian countryside, a remarkable economic dynamism and an economic development *similar and synchronous to that of Central European regions*. Thus, at the establishment of the Communist regime, the rural space of Banat was very powerful through its farms, exceptionally endowed with modern agricultural machinery (the region had the largest number of farming machinery in Southeastern Europe). Secondly, the presence of a rural elite, used to applying the most productive technologies, ensured smooth market adaptability, as it was a social class characterized by its *entrepreneurial culture* and by sustainable practices of management of their main capital – the land.

The Communist regime attached a great importance to the repression of the rural elite from Banat, subjected to deportation and to social persecution. With few exceptions – in the mountain area – agricultural properties were collectivized, so that the Banat villages, deprived of autonomy, would evolve under the Communist regime decisions, experiencing an involution in terms of efficiency and dynamism. Most villages were operating mostly depending on the cities.

In 1989, at the fall of the regime, most of the Banat villages were incapable of self-sustainment and of self-organization.

Did the Banat village manage to regain the role and the place it held before the establishment of Communism? Was the revitalization of its historic qualities possible, in the context of post-Communist transition, but after 42 years of Communism? How did the speed, the quality and the direction of this shift influence the sustainability of Banat villages, in the context of post-Communist transition?

What are the determinants of the different levels of sustainability?

3. METHODOLOGY

The study is based on a conceptual paradigm structured around two thematic axes: sustainable development and systems theory – the behavior of anthropized territorial systems in a transformational context.

The concept of sustainable development (SD) occurred in the 80's, due to the awareness regarding the limits of growth and the negative effects of society on the planetary ecosystem, and it was defined as *development that meets society's needs of the present without compromising the ability of future generations to meet own needs* (WCED, 1987; Mebratu, 1998; Woods, 2007; Rudawska et al., 2013).

Initially considered more of a wish (utopian to many), the concept was subsequently resumed, highly debated, nuanced and enriched. After a period of emphasis on its ecological connotations (synonymous, in part, to the term of eco-development) (Ianoş et al., 2010), the connotations of the concept of sustainable development have evolved through conciliation of the Environmentalist – Techno-centrist, Humanist – orientations, towards a recognition of the multidimensionality of sustainable development – *environmental, social (also institutional and political) and, respectively, economic (also technological and informational)* – all of equal importance in the connotation of the concept (Day, 1998; Paris & Kates, 2003; Williams & Millington, 2004; Hamstead & Quinn, 2005; Rojanschi et al., 2006; Kitchen & Marsden, 2009; Markey et al, 2010; Waas et al., 2011; Hedlund-de-Vitt, 2014) (Fig. 2).

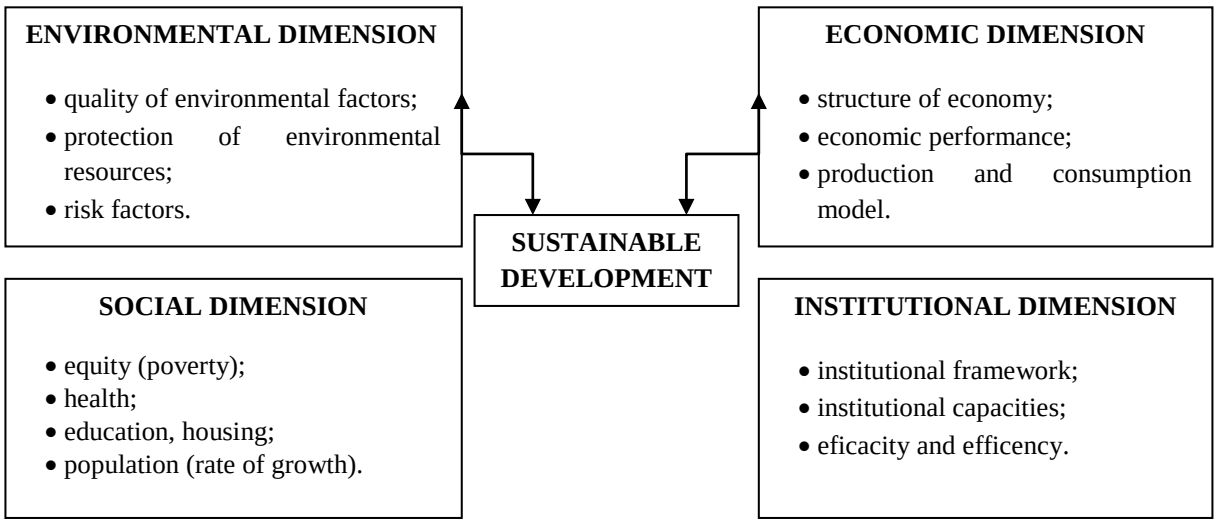

Figure 2. The multiple dimensions and themes of SD and the subsequent themes

The clarification of the concept of SD was also accompanied by an effort towards its operationalization, to enable its application in the context of a complex and multi-scale socioeconomic reality. Sustainability was originally conceived in relation to three major themes: the natural environment (considered by its intrinsic value, not as a resource); the support space; respectively, the communities – elements to be protected. With the acceptance of the multidimensionality of SD, more and nuanced issues were added. The efforts of measuring sustainable development were defined based on these themes and objectives, and resulted in the identification of elementary indicators, and of equally numerous associated or complex indicators.

Territorial systems theory offers the possibility of addressing sustainable development beyond the plethoric approach. Territorial systems (TS) are defined as functional structures consisting of components which support *interdependencies*, giving information to its *relational* character, and having information summarizing the characteristics of several components or component sets (Ianoș, 2000). This way, the *exhaustive* analysis becomes replaceable by an *essentialized analysis, with the researcher's role being that of selecting indicators with the highest diagnostic power*.

The use of the *territorial system* as the *operational entity in sustainable development* (Ianoș, 2000) provides additional theoretical and methodological advantages in addressing sustainable development:

- introduction of multi-scale nature of the analysis, while the analyzed territorial system is a *subsystem* of larger territorial systems, with different contexts of interaction impacting sustainability that is being defined in relation to these;
- the micro-scale level is the most appropriate for the analysis, whereas the mezo- and macro-scale levels are relevant to cumulative processes at lower levels (Ianoș, 2000);
- *in transformational contexts, TS sustainability depends on its vulnerability or resilience. Vulnerability and resilience* are characteristics defined antithetically in relation to an event affecting the system's evolution. *Vulnerability* is the poor ability of territorial systems to respond to changes affecting their integrity to the extent where a territorial system can be affected by the impact of a pressure element (Smit & Wandel, 2006; Gallopin, 2006; Marsden, 2009; Scott, 2013; Skerratt, 2013). *Resilience* is the ability of communities to withstand shocks (Adger, 2000; Folke et al., 2002; Dawley et al., 2010; Wilson, 2010; Yamamoto, 2011); we differentiate *reactive resilience* (TS adapt, change their characteristics or behavior) (Holling, 1973; Gunderson, 2000; Nelson et al., 2007; Maguire & Cartwright, 2008) and *proactive resilience* (TS *anticipate change, influence change,* renew the community, develop new trajectories) (Pike et al., 2010; Magis, 2010; McManus et al., 2012; Skerratt, 2013). The assessment of vulnerability/resilience can be achieved through evaluating TS performance (Perrings, 2006; Cote & Nightingale, 2012; Wilson, 2012). *TS sustainability is thus determined by these features.*

The following hypotheses were formulated based on the conceptual paradigm described above and in relation to the temporal and regional context:
(a) the 42 years of communism had major impact on the dynamic and adaptive nature of rural settlements in Banat, which operates out of inertia; (b) sustainable rural settlements are the ones benefiting from favorable location in relation to major regional structural elements – dynamic poles, main axes; (c) unsustainable rural settlements are the ones located in remote positions and/or those dependent on mono-industrial urban centers destructured after 1989; (d) most sustainable rural settlements present an adaptive resilience.

This study applies the following methodology: analysis of the environmental dimension of countryside sustainability; assessment of socio-economic and institutional sustainability of settlements, based on selected indicators; the correlative analysis of settlements' efficiency levels and their interaction with regional structural elements (axes, poles), in order to establish a typology of rural areas, suggestive of the role and place of settlements in the rural regional system; identification of factors responsible for different levels of sustainability, through case studies corresponding to each type of space.

The study uses qualitative data provided by the Environmental Agency in Timiș and Caraș-Severin (related to the quality of environmental components), quantitative data retrieved from the Tempo (National Institute of Statistics) open access on line database (number of inhabitants, number of elderly people, length of water supply network) and from the County Departments of Statistics (number of enterprises, number of local jobs, turnover per communes, number of unemployed persons). All these were used to calculate the indicators as described in subchapter 4.1.2. Also, quantitative and qualitative data were obtained through semi-structured interviews conducted (according to the algorithm described in subchapter 4.3) with the authorities (mayors, deputy mayors, secretaries of Communal Halls) and source-individuals (school directors, teachers, responsible of cultural activities)

from the communities selected as case studies, or through direct and indirect observation.

4. RESULTS AND DISCUSSION

4.1. Analysis of rural settlements' sustainability

4.1.1. Environmental sustainability of rural settlements

In rural areas of Banat, *air quality* is affected by sulfur dioxide emissions resulting from burning fossil fuels; emissions of ammonia, due to agricultural practices: biomass combustion; fermentation of residues from animal waste; treatment and deposition of animal waste and manure. To this, pollution due to traffic in towns located along major transport axes, respectively pollution from industrial units in urban poles can be added, when the communities are in their proximity (Timiș Environmental Protection Agency, 2013, Annual Report, p. 26; Caraș-Severin Environmental Protection Agency, 2012, Annual Report, p. 24, 39, 40).

Soil quality: Banat has vast natural areas of soils with good and very good suitability for agriculture. 50% of the Banat plain soils are placed in classes I and II of suitability: chernozems (gleyic, typical), fluvisols (mollic), preluvisols (mollic). The soils in the high plains and hills are vulnerable because of a soil impoverishment process occurred during the Communist period, due to the implementation of a deep drainage canal system, and to farming practice involving complete removal of the vegetation cover and neglecting of soil nutrients recovery (Ancuța, 2008). The soils in hill side areas and sub-mountainous areas with slopes sharper than 15% are degraded in a proportion of 50%, through erosion and landslide processes, due to their integration in the agricultural circuit without the application of anti-erosion measures during the Communist period. During the post-Communist transition, the main risks to soil pollution are related to the storage and fermentation of waste in spontaneous landfills, which exist despite specific regulations, with the low ecological education or training on suitable technologies to the physical and chemical parameters of the soil acting as aggravating factors (Timiș Environmental Protection Agency, 2013, Annual Report, p. 82-107; Caraș-Severin Environmental Protection Agency, 2012, Annual Report, p. 76-86).

Water quality has seen definite improvements in recent years, with the application of European regulations on wastewater treatment and discharge. However, a large number of wastewater discharges without treatment are noted downstream from economic units (livestock farms, sawmills). The main source of pollution (difficult to monitor and control) is *diffuse pollution* due to discharge of wastewater directly into rivers (in communities located along them), respectively their takeover by rainwater reaching the rivers, to chemical fertilizers used excessively. Groundwater display high levels, overcoming limits for sulfates, chlorides, ammonia, phosphates and nitrates, nitrates (without exceeding the toxic threshold) due to local sources of pollution (farms, oil fields), to sludge and waste storage, to agricultural practices, and to uncontrolled disposal of wastewaters in communities lacking centralized sewage systems (Timiș Environmental Protection Agency, 2013, Annual Report, p.50-60; Caraș-Severin Environmental Protection Agency, 2012, Annual Report, p. 50-66).

Seismic risk is present throughout Banat, with the southern half of the plain area and the mountain area measuring 8 degrees on the Mercalli scale of seismic risk (Ancuța, 2008). The risk of *flooding* is acknowledged in the low plain area, despite the existing hydro-technical system; although progress in monitoring flood risk has been made, the management of risk situations is still lacking, as there are some technical parameters of facilities; and failure of the population to respect the installation of flood defense is an aggravating factor.

Recently, *increased heavy rains* (due to the influence cyclones developing in the periphery of the Azores anticyclone in Banat, as well as the Mediterranean cyclones), in conjunction with poor management of sloping land (fallowed or cleared), increasingly expose villages in the mountain area to flood risk.

Another recent risk is the *drought*. Despite the increasing number of tropical days per summer, there is still little concern for water resources management (Ancuța, 2008).

4.1.2. Socio-economic and institutional sustainability of rural settlements

Three indicators were selected to assess the *economic sustainability* of rural settlements: density of SMEs (SMEs), turnover per capita (TURN) and number of jobs locally available (JOB).

Density of SMEs is significant for assessing the entrepreneurial spirit of a population in a territory, usually named entrepreneurship. The ability of people to see opportunities, to initiate and develop business is, therefore, a measure of *reactivity* and adaptability of the rural population in the context of post-Communist transition to a market economy. At the same time, SMEs, as more flexible

structures usually managed by locals, are considered important factors of the sustainable development of small communities.

The analysis of the data points out a large dispersion of SMEs density values (Table 1).

Values up to 300% above the regional average were recorded in the communities benefiting from a favorable location, close to the regional urban pole Timișoara, while registering totally isolated values in the rest of the countryside (Fig 3).

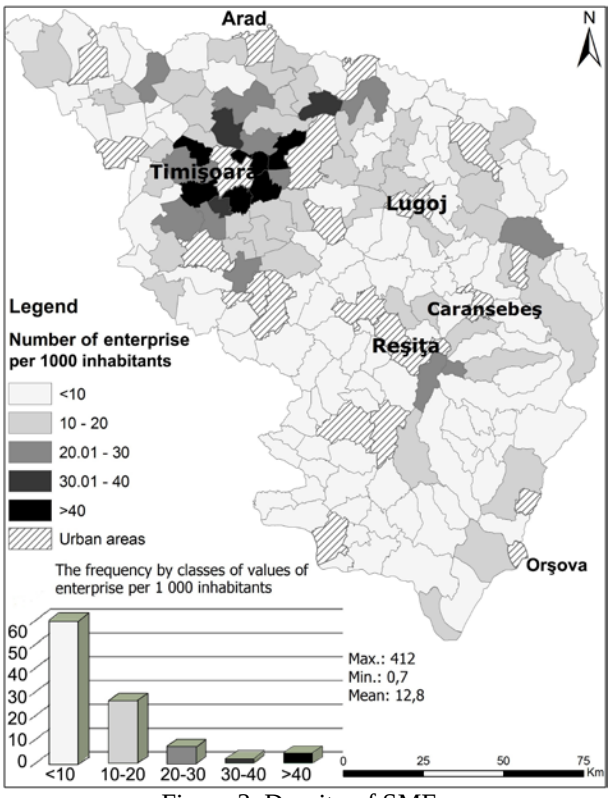

Figure 3. Density of SMEs

These values are the result of exogenous initiatives, with entrepreneurs being drawn into these spaces by the proximity of a major urban market, by low land prices (compared to the regional urban pole) and by the presence of a significant labor force available (Ișfănescu, 2006).

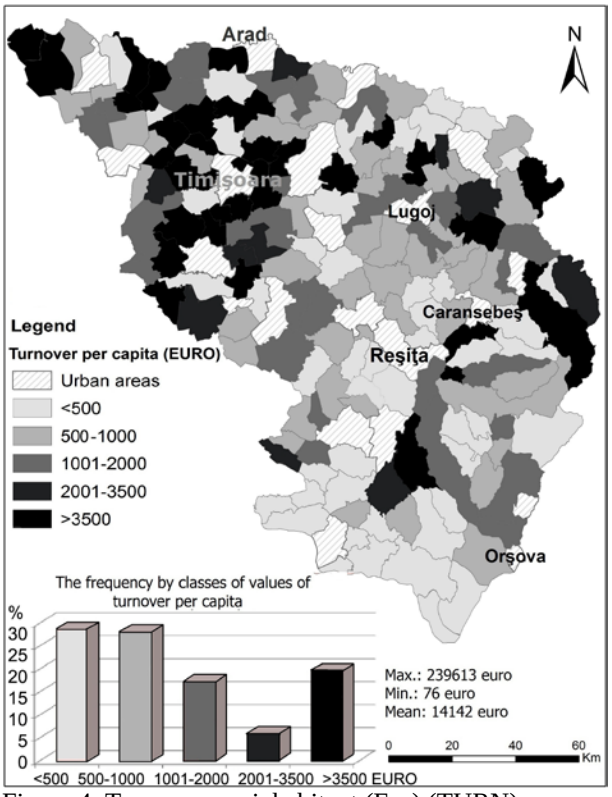

Figure 4. Turnover per inhabitant (Eur) (TURN)

Low values of SMEs density appear in communities that are relatively isolated from the main axes and economic flows characterized by the presence of repulsive factors for potential investors: low income, and therefore fewer opportunities for product sales; poor volume of labor force available due to accentuated aging; poor accessibility, due to poor state of transport infrastructure; poor demographic representation of the social segments likely to be dynamic and open-minded

The turnover divided by the number of inhabitants (TURN) provides an image of the productivity of economic agents and – consequently – of their direct and indirect role in community development, through their tax fraction of the income transferred to local authorities (Fig. 4).

Table 1. Characteristic statistic values of the analyzed indicators

Indicator	Regional average	1st decile average	10th decile average	Frequency of unities per classes of values (cf. maps) (%)				
				1	2	3	4	5
SMEs	19.6	2.6	62.1	59	26.8	7.42	1.71	4
TURN (Eur)	7231	87.82	22847	32.57	18.28	22.14	8.97	18.24
JOB	237.56	8.88	1557.58	41.04	19.65	24.27	5.2	9.82
DEP	0.9	0.64	1.37	7.77	15.02	28.49	24.87	13.2
ELD (%)	17	10.4	29	4.68	42.7	30.72	14.58	7.29
UNEMPL (%)	7	2.45	13.5	4.68	52.6	29.68	7.81	5.2
WAT (%)	169	0	873	33.67	31.6	13.98	4.66	16.06

Note: The 3rd class is the range of medium values. The 1st decile includes the lowest 10% values of the data string; the 10th decile includes the highest 10% values of the data string.

The ratio between the extreme values is 1:3100, and the ratio between the average values of the extremes intervals is 1:260 (Table 1). The spatial distribution of values reveals a favorable situation of the North-Western region, namely of the communities in proximity of major transport axes, or of the multifunctional mountain areas, which show over 300% higher values than the regional average. The lowest values of TURN (below 500 euro/capita) were found in the North-Eastern and Southern region communities, respectively in the South-Western Banat communities on the border with Serbia, being communities with the lowest level of economic development in Banat and communities deficient in social and economic capital, and in accessibility.

The number of jobs existing at the local level has diagnostic value for the ability to generate prosperity, and to disseminate know-how among the population of an area (Fig. 5).

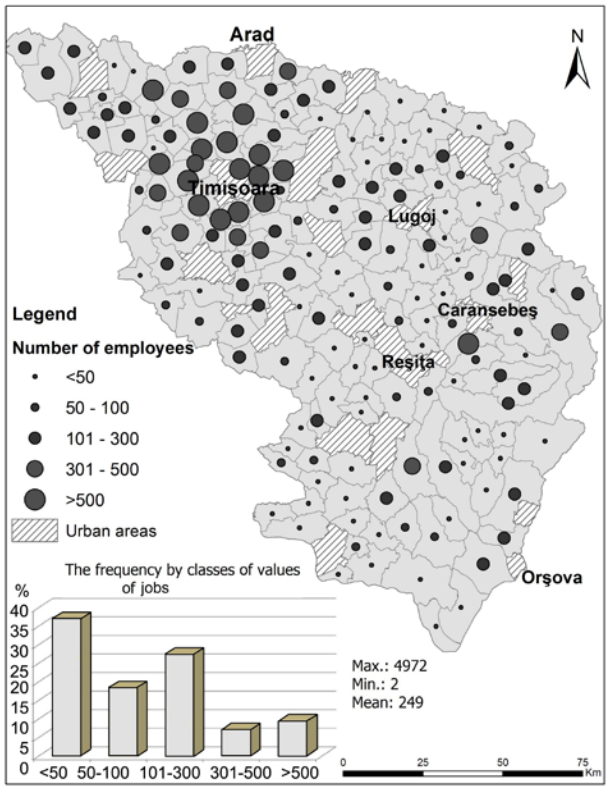

Figure 5. Number of jobs at local level (JOB)

Relations between the extreme values and the averages between extreme ranges are high (1:2486 and 1:176). This, once again, highlights the contrast between the rural areas found under the immediate influence of a regional urban pole – Timisoara – and along the axes converging towards it, and the rest of the countryside (60% of all the communities) where almost all the economic units are micro-enterprises with low numbers of employees (below 10, usually 1-2), most of them being concerned with trade. A few communities in the East and South-East of the region, where economic units employing larger numbers of workers operate in wood and agricultural products processing, stand out as an exception from this rule (Fig. 5, Table 1).

Social sustainability is assessed against three indicators: the index of depopulation, the share of the elderly population, respectively unemployment.

Depopulation Index (DEP) reflects the demographic tendencies of the communities. Calculated as the ratio between the number of inhabitants from the last record and that from the previous record, DEP indicates: *stagnation* of population if its value is 1; population *increase*, the more intense as the DEP takes a value greater than 1; respectively population *decline*, the more pronounced as the DEP takes values closer to 0 (Ancuţa, 2008). DEP is therefore a powerful diagnostic indicator regarding the vigor of the population in the analyzed TS, also providing information about endo-dynamic (attractive to migration flows) or repulsive (unattractive for population flows) character thereof. The rural population is declining in Banat, as the 0.9 average value of the DEP indicates. Intraregional differences are, however, significant (Fig. 6).

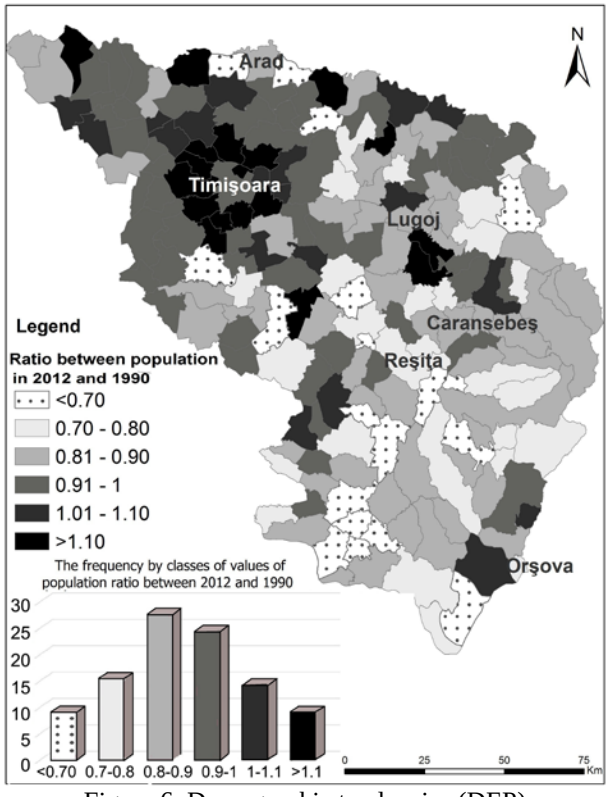

Figure 6. Demographic tendencies (DEP)

A population growth trend occurs in only 23% of the communities (where DEP takes values greater than 1): they are concentrated in the North-Western

region (the Banat plain area) around the regional urban pole, Timişoara (with certain communities where the population has increased several times) and along the axes connecting the city with other urban poles. Demographic decline is indicated for 77% of the communities (with 22% showing sharp decline); they are situated in the mountainous or hilly area, with the trend being all the more critical as accessibility is poor and the distance to the cities grows.

The share of the over 65 year old population (ELD) reflects the pressure on the working population and it outlines an image of population vigor, regarded as a resource for development (Ancuţa, 2008; Williams & Schrimer, 2012; Kulcsar & Brădăţan, 2014). The average regional ELD is 17%, which shows that rural Banat is overall a slightly overaged area. However, 57% of the communities are below 15% (the limit beyond which the population is considered aged): the vast majority of these are villages in the North-Western region and along the European route connecting the Southern zone of the country (E 70) (Fig. 7).

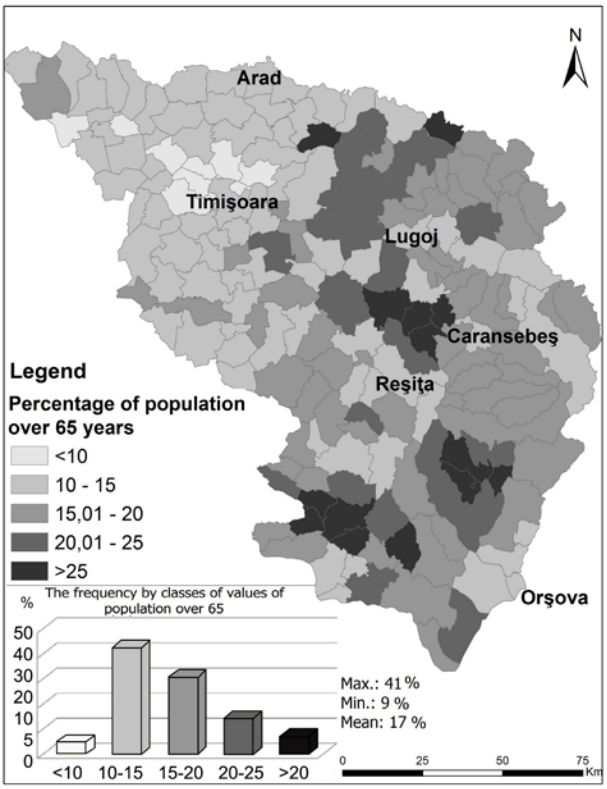

Figure 7. Share of over 65 population (ELD)

The highest percentages of elderly people are present in the communities of the mountain and hilly areas, in a situation of difficult access and/or in proximity to towns affected by post-Communist industrial destructuration. Values of 50-100% higher than the regional average demonstrate the atonia of the natural dynamic factors and lack of centripetal flows, while they emphasize social vulnerability on short term and, in the absence of specific strategies, on medium and long term.

Unemployment rate (UNEMPL) constitutes a suggestive measurement of social equilibrium, since the integration of active population into economic activities is an initial condition for its prosperity (Ancuţa, 2008). The regional average of the analyzed rural area is rather high (7%) due to high extreme values: about 5% of the communities present values of UNEMPL higher than the average of 50%-100%: these are the communities in close proximity to former mining or heavy industry centers, as well as those with poor accessibility to the dynamic urban poles (Fig. 8).

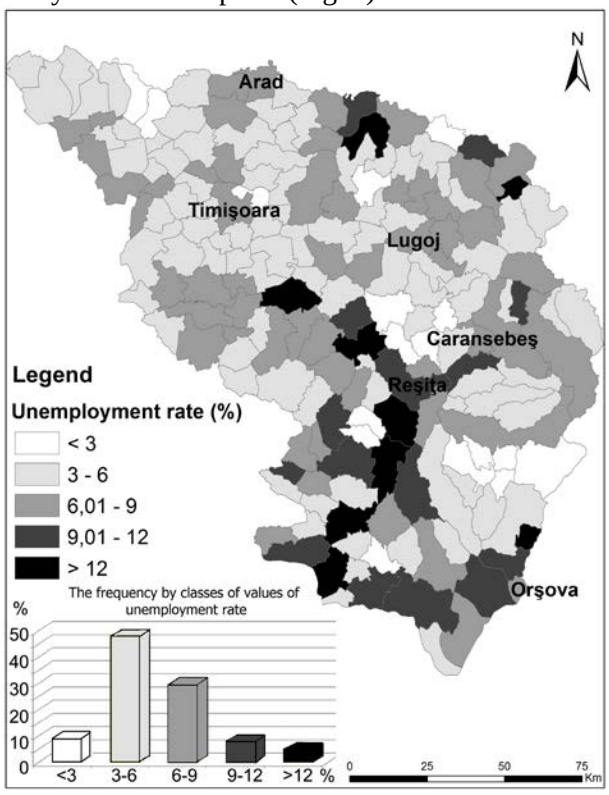

Figure 8. Unemployment rate (UNEMPL)

For 57% of the communities, the values of UNEMPL are with 25-50% lower than the regional average; these communities enjoy balanced locations in the plain area – in proximity of main axes and dynamic poles – respectively, in the Central and Eastern mountain areas of Banat, where the situation has improved noticeably over the past 10 years (Ancuţa, 2008), signaling a revival of economic activities.

The quality of life and the efficiency of local policies are analyzed in terms of expansion of the water supply in the last two decades (WAT). The choice of this indicator was based on the fact that during the Communist period, the comfort of living in the Romanian village was completely neglected, and

development of the water supply network over the transition period represents a significant indicator for improvements in the quality of housing, as well as for the extent to which local authorities are concerned with accessing various funding programs designed on a supra-local level for this purpose. Thus, this indicator also becomes significant for the *effectiveness* of local authorities. WAT reveals a differentiation of rural space following the principle of distance from the dynamic urban poles and from the main axes of communication: once again, this highlights the vulnerability of peripheral localities where social and economic decline combines with the local authorities' inertia in an unfortunate way. The unfavorable situation of the mountainous and hilly areas is notable, since a large number of communities lack a water supply network: 16% of all communes (Fig. 9).

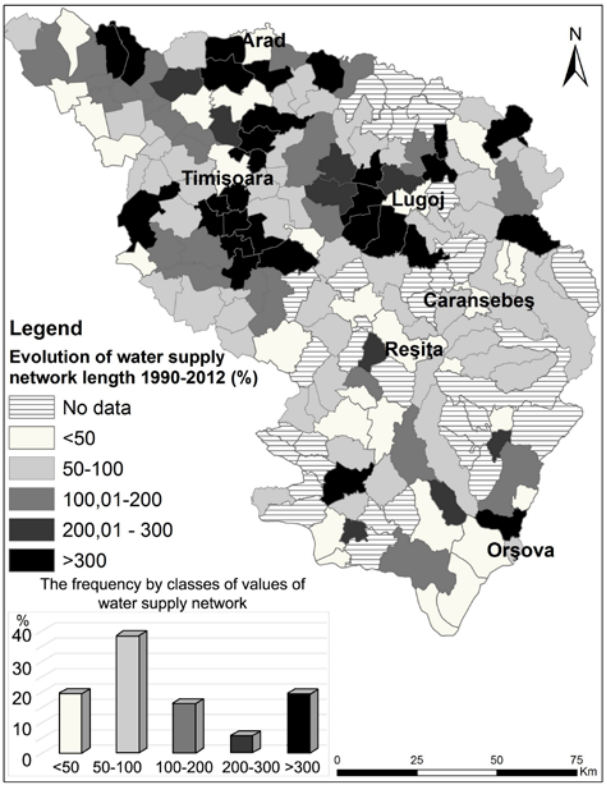

Figure 9. Evolution of the water supply network (WAT)

4.2. Rural space typology

Rural settlements' performance evaluation and their analysis in relation to structural and functional supra-local contexts led to the identification of four types of rural areas (Fig. 10).

Integrated rural areas work in interdependence with the regional urban pole, Timisoara, around which they are situated. Communities in this area show high values of all analyzed indicators. The intense population growth due to policies against urbanization is notable. Real estate dynamics and the high income of the population (commuters) determine the extension of utilities and an urban quality of habitation. The functional profile is dominated by the residential function, but it is also diversified by the presence of a large number of medium and small economic units, operating in various fields.

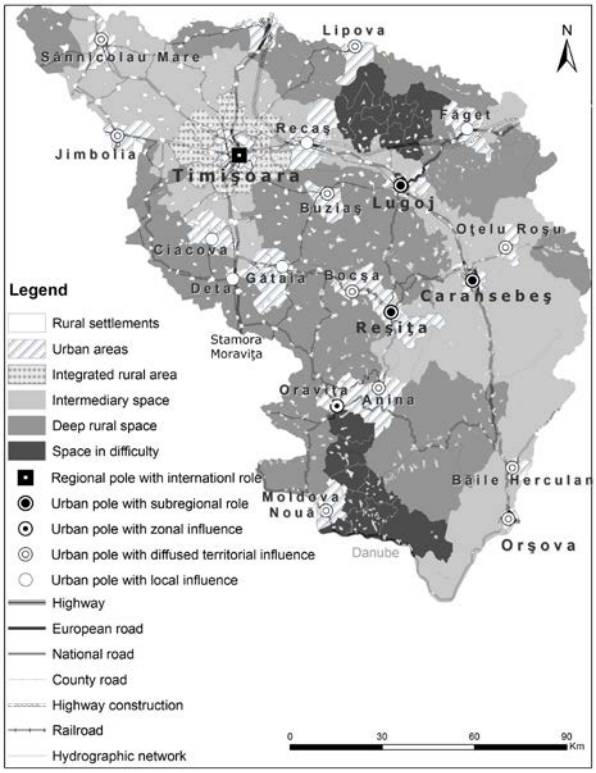

Figure 10. Typology of rural TS

Intermediate rural areas include communities from the second crown of the regional urban pole, Timişoara, as well as in the third or even fourth rural crown, in the North-West area of the region, where there is also an influence from two local urban poles – Sânnicolau Mare and Jimbolia – with their last 10 years of positive economic dynamics. The intermediate rural area is structured broadly along the European axes – the two branches of the E 70 Timisoara–Caransebeş–Orşova, respectively Timişoara–Stamora Moravita. The values of the analyzed indicators are within the regional average (Tab. 1, Fig. 3-9). Demographic dynamics is stagnant or slightly declining, characterized by low centripetal flow. Except for the mountain area, servicing and housing quality has improved.

Deep rural areas include communities subject to poor accessibility in relation to the axes of communication and urban poles (hilly, mountainous areas or areas situated on the border). They present negative demographic dynamics, intensive flows out of the labor force, high percentages of elderly population, poor economic indicators (low density of economic units, low turnovers, and a low number of jobs).

Distressed rural areas are characterized by:

accentuated demographic decline, an above 40% share of elderly population, high unemployment rates, values near to zero of the economic indicators, difficulty of access, and even isolation (the Central-Western area of the Lipovei hills area or the Central-Southwestern area of the Banat Mountains).

4.3. Case studies

In order to identify the factors responsible for different levels of sustainability, case studies were carried out according to a algorithm defined by Walter & Salt (2006, cf. Wilson, 2012), which considers: the *function* (sustainability in terms of capitalization of a geo-economic potential); *structure* (sustainability in terms of housing and human pressure); *identity* (local community sustainability); *the mechanisms and types of feedback* (sustainability of the behavior of territorial agents involved in decision-making). Each selected TS was analyzed diachronically – before and after 1989 (Table 2).

Table 2. Main characteristics of study-cases

Integrated rural space: GIROC community, situated 3 km South from Timișoara (the largest city in the country's Western part), bordered by the European Route E70 (Timișoara – Stamora Moravița) to the North-West		
	Before 1989	**After 1989**
Function	- residential and agricultural (collective farms, poultry farming complex);	- *residential* function (village population increasing from 4170 to 7487 inhabitants in the last 25 years, due to counter urbanization flows; - *mixed* economic functions: units in various fields: industry (manufacture of footwear and clothing, manufacture of plates, sheets and profiles, manufacture of electric equipment and metal constructions), constructions, logistics (freight), trade (large commercial areas providing 40% of the community turnover), leisure and tourism; - the majority are foreign-owned or mixed ownership enterprises, medium sized, and located along the European road, close to the entrance in Timișoara; - a prominent service sector, due to the presence of significant human capital, to urban market proximity, and to the high level of income of the population;
Structure	- traditional habitat, with minimal changes in the 1970-1980 years;	- the built environment has undergone major transformations: - 90% of the old houses are renovated; - the number of dwellings has increased from 1607 to 3299 units; - double density of building grounds (village hearth gardens are sold as building lots); - the built area expands by 150%, due to the real estate dynamism; - around 30% of agricultural land is blocked by estate developers; - service and the quality of living is close to urban conditions in the original village hearth (from technical and urban amenities to urban furniture, playgrounds and green spaces, expansion and modernization of education facilities, transportation, winter road maintenance equipment, waste management);
Identity	- two yearly events would take place, celebrating the patron saints of the Orthodox, and, respectively, Catholic, church in the village;	- the traditional feast celebrating the Orthodox Church is organized (the German community has emigrated); - local authorities emphasize the perpetuation of local identity by creating and financing structures and specific mechanisms: dance crews and choruses, a local museum, (folklore and traditions-related) festivals with more than local attendance, scientific sessions dealing with local history and tradition, free folk dances courses organized in schools;
Feedback	- absence of feedback; decisions made by the higher ranks of the political hierarchy were applied.	- the Community Hall was one of the most dynamic and reactive ones in the county, receiving several annual awards in recognition of their efficient management and successful accessing of various funding schemes available (county-level, national, European ones); - projects targeting the implementation of water supply, gas and sewer networks, the building of asphalt roads, public space management, as well as the expansion and modernization of public buildings have been accomplished over the last 25 years;

		- the village's current level of indebtedness (due to co-financing requirements of these projects) affect the current capacity for accessing new funding schemes.
Intermediary rural space: Carașova community, situated at approximately 14 km to the South from the town Reșița, (the Caraș-Severin county seat), in a karstic depression, in the proximity of the Semenic-Cheile Carașului National Park		
	Before 1989	**After 1989**
Function	- the residential function (most of the active population was working in industry in the county-seat town); - the farming function (the elderly population was farming their own lands, except from collective farms);	- the farming function widened: semi-subsistence farming is practiced in family structures, as well as in associations and companies; - livestock rearing intensified: meat production increased in the analyzed period from 208 tons to 462 tons, and wool production increased from 6900 kg to 9000 kg; - fruit growing intensified (25 traditional fruit distilleries also function); - forest restitution triggered logging activities (4 companies) and primary wood processing (4 companies) developed; - functional diversification occurs in the tertiary sector, especially with regard to proximity trade and horeca, and less to tourism (despite the village's favorable position, close to a national park, there is only one boarding house with 8 beds);
Structure	- a traditional habitat, restored in the 1980s (due to the high income of the population working in heavy industry;	- a significant rate of renovation (due to former residents return flows with retirement, as well as to the income of the active population working abroad as beneficiaries of a Croatian passport); - a poor rate of housing construction, including the second homes (the number of dwellings increased by 4.5%); - improvements of public space management (urban furniture, spaces destined for community-related events);
Identity	- the population affirmed their Serbian identity (in the context of the special Romanian-Serbian relationship) and one class of Serbian language per week was taught in school;	- the population have reaffirmed their Serbian-Croatian identity, enabling multiple mechanisms and structures that aim at increasing identity-related awareness and activism (political structures, cultural associations, cultural exchanges, economic relations, organization of a bilingual high school);
Feedback	- absence of feedback; decisions made by the higher ranks of the political hierarchy were applied.	- projects of partial rehabilitation of the road network (including forest roads), of public utility buildings (schools, culture centers, the Village Hall), to achieve water supply network; the projects were funded by accessing various sources – national, county-level, European.
Deep rural space: Iablanița community, situated around a mountainous area, within the Southern sector of the corridor crossing the region's Eastern mountainous zone, 25 km from Băile Herculane, 60 km from Caransebes and 110 km from Reșița		
	Before 1989	**After 1989**
Function	- mining and farming (subsistence farming);	- S*ubsistence farming* is widely practiced; semi-subsistence farming is practiced only on a small scale, with a poor level of profitability (of the existent 920 farms, only 40 sell agricultural produce, 99% of all are family farms, less than 5 hectares); - the prevailing economic model is still one where produce obtained by the generally elderly locals, is intended for the direct consumption of their town-dwelling descendants, rather than for market capitalization. This model has a direct impact on the low level of concentration of SMEs in these communities, with the high costs of field work, relative to household incomes, resulting in the low purchasing power of the population; - with the restitution of forests, logging and primary processing of wood also intensify (about 50 individual producers and micro-units with 1-2

		employees); Euro pellets are made and sold throughout the country; - building materials operation (one unit); - poor development of the tertiary sector (proximity trade);
Structure	- traditional rural habitat, with 18th c. traits;	- poor rate of renovation / rehabilitation (consequence of the low profitability rate of economic activities, of the 25% share of elderly population, and of the flows out of active population);
Identity	- religious events organized with discretion;	- an important role assigned to traditional events related to religious life;
Feedback	- absence of feed-back; decisions made by the higher ranks of the political hierarchy were applied.	- specific projects destined for technical and public utility (roads, sewerage).
Rural space in difficulty: Cralovăț village; situated on a valley of the hillside area in the North-East of the region, 12 km from the Timișoara – Lugoj axis, at equal distance from the two urban poles		
	Before 1989	**After 1989**
Function	- residential (active population commuting to Timișoara and Lugoj) and farming (socialist and subsistence agriculture);	- residential function (a village of retired people, returning from the county's towns); - the farming function is declining; farmland is underused; there are only 2 agriculture-related undertakings (waning and ageing human resources account for the scarcity of local undertakers);
Structure	- traditional rural habitat; - agricultural landscape (the largest orchards in the Dealurile Lipovei hillside area);	- traditional habitat, but declining: only 8% of the active population is employed, which explains the lack of return necessary for the building stock renewal; - over 26% of the houses are deserted; - 15% of the houses are inhabited only on weekends; - large areas of farmland and orchards are derelict; - large areas of land of former agricultural use are reclaimed by the oak forest;
Identity	- life in the local community was organized around the Orthodox church;	- as most of the population is aged (over 66% of the people are retired), no local event is organized, the church is not functional, no form of social service exists, as a matter of fact;
Feedback	- absence of feedback; decisions made by the higher ranks of the political hierarchy were applied.	- no local development project was implemented.

5. CONCLUSIONS

After 25 years of post-Communist transition, which have created conditions for self-management of local communities, rural settlements in Romanian Banat present a wide variety regarding their sustainable development.

Most settlements in rural Banat – 49.72% – fall into the deep rural type, work by inertia, present a very low level of reactive resilience, are characterized by a *pronounced socio-economic vulnerability* – a descending demographic trend, the lack of financial resources and of initiatives, the underutilization of (complex) resources, the perpetuation of the under productive economic model of subsistence through agriculture, and poor accessibility. Specific environmental vulnerability may increase due to the poor work-force and financial resources, and to the lack of interest of local agents.

31.36% of the rural settlements are intermediary rural areas, with moderate sustainability, a moderately level of reactive resilience, evident in the poor levels of functional diversification and of adaptation of better management models for traditional activities. On medium term, the stagnation or the slight decline of demographic dynamics might affect the intensity and quality of these settlements' reactivity.

The main risk is represented by increased

water pollution and land degradation through the use of agricultural techniques. Given an increasing levels of responsibility and environmental education, these settlements *have the potential for becoming the most sustainable ones in Banat.*

The settlements which are situated at the extremes from the perspective of their behavior during the post-Communist transition represent equal shares.

Thus, 9.46% of the rural settlements have high levels of reactive resilience, and partly of pro-active resilience, as well, making up integrated rural areas, and functioning in interdependence with the regional urban pole. All social and economic parameters are favorable. It is, however, notable that many of the growth factors are exogenous. Also, increased human pressure is a vulnerability factor in the medium and long term, in relation to which the rural settlements should develop mechanisms aiming the protection of the quality and quantity of resources, as well as of ecological balance. Integrated rural settlements present *moderate sustainability*.

9.46% are settlements in difficulty, lacking resilience, with a *very pronounced social and economic vulnerability*. The accentuated demographic decline, the very poor level of economic activities, the destructuration of social servicing, all indicate *extinction* as the most likely long term scenario for these territorial systems.

The high value of the environmental components, including the landscape (hills and the mountains), with extremely low levels of human pressure, constitute an asset, whose recovery, however, would require increasing the reactivity of local agents (territorial marketing, ensuring accessibility).

In conclusion, the main active bet of rural Banat rural settlements is still shifting from the *assisted* settlements to the *self-organized* settlements.

The *key factors* of sustainable rural development in Banat are the local agents – residents and authorities – and its *sine qua non* condition is their capability to attract external capital, supported by their awareness and responsibility for the fragile balance of the sustainability-vulnerability couple on short, medium and long term.

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